

## ABSTRACT

A track width defining layer for defining a write track width of a thin-film magnetic head is made of a CoNiFe film formed through electroplating. The CoNiFe film contains 60 to 75 weight % cobalt, 10 to 20 weight % nickel, and 10 to 20 weight % iron, and has a crystal structure that is a mixture of a body-centered cubic structure phase and a face-centered cubic structure phase, in which  $I_b/I_f$  falls within the range of 0.3 to 0.7 inclusive where  $I_b$  represents the intensity of an X-ray diffracted from a (110)-plane of the body-centered cubic structure and  $I_f$  represents the intensity of an X-ray diffracted from a (111)-plane of the face-centered cubic structure. The pH of a plating bath for forming the CoNiFe film through electroplating is adjusted to 3.0 to 4.0 inclusive.